REMARKS

Claims 1-42 are pending in the present application. Claims 17-33 are rejected. Claims 17, 18, 20, 21 and 33 are herein amended.

Drawings

As requested by the Examiner, Applicants herewith submit annotated, or "marked up" copies of the replacement sheets submitted on March 15, 2006.

Claim Objections

Claims 20 and 33 were objected to because they each recite "a maker," which appears to be a misspelling of the words "a marker." Applicants herein amend the claims in order to correct this error.

Applicants' Response to Claim Rejections under 35 U.S.C. §112

Claims 18 and 21-33 were rejected under 35 U.S.C. §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which the applicant regards as the invention.

It is the position of the Office Action that claim 18 is indefinite because it is unclear what relationship, if any, exists between "a biomolecule (A)" and the first and second biomolecules of independent claim 17. First, it is noted that claim 17 only recites a single "biomolecule." The recitation of a "first biomolecule" and a "second biomolecule" appears in claim 21.

The recitation of "a biomolecule (A)" in claim 18 is intended to instead be the "first single-stranded oligonucleotide" previously recited in claims 17 and 18 to be bonded to the substrate. Therefore, Applicants herein amend claim 18 in order to recite that "Y is a functional group to be bonded to said first single-stranded oligonucleotide." Please see amended claim 18.

It is the position of the Office Action that claims 21-33 are indefinite because it is unclear what relationship, if any, exists between "a biomolecule (A)" and the first and second biomolecules of claim 21. The recitation of "a biomolecule (A)" in claim 18 is intended to instead be the "first biomolecule" previously recited in claim 21 to be bonded to the substrate. Therefore, Applicants herein amend claim 21 in order to recite that "Y is a functional group to be bonded to said first biomolecule." Please see amended claim 21.

It is the position of the Office Action that claim 22 is indefinite because it is unclear what the units of molecular weight are. The Office Action suggests amending the claims in order to show the proper units of molecular weight. In response, Applicants note that the molecular weight has no units, since molecular weight means the mass of a molecule relative to the mass of a standard atom, 12C (taken as 12.000). This would have been obvious to one having ordinary skill in the art. Favorable reconsideration is respectfully requested.

Applicants' Response to Claim Rejections under 35 U.S.C. §102

Claims 17-19, 21, 23, 24, 26, 27 and 32 were rejected under 35 U.S.C. §102(b) as being anticipated by Church et al. (U.S. Patent No. 6,326,489) as defined by Hovel et al. (U.S. Patent No. 4,401,952).

It is the position of the Office Action that **Church** discloses the invention as claimed. The Office Action relies on **Hovel** to define GaAs as a metal. **Church** is directed at an array and a method of constructing a synthetic, surface bound nucleic acid array. In **Church**, a first single-stranded oligonucleotide is attached to the solid support. This first oligonucleotide can be formed either by one-by-one synthesis or attached in whole at one time. See column 7, lines 34-53 and column 12, lines 17-34. Then, a primer is hybridized to the 3' end of the first oligonucleotide. Finally, a second oligonucleotide is enzymatically synthesized and hybridized using DNA polymerase I. See column 12, line 66 to column 13, line 4 and column 3, lines 55-63. Further, it is noted that **Church** includes labeling with a Green Fluorescent Protein (GFP).

In response, Applicants herein amend the claim in order to distinguish between the method of **Church** and the method of the present invention. In an embodiment of the present invention, first and second single-stranded oligonucleotides are hybridized to form a double-stranded oligonucleotide bonded together partially or entirely in a complementary manner. Then, a terminal of the first single-stranded oligonucleotide is bonded to the metal substrate. No fluorescent labeling is utilized.

Specifically, Applicants herein amend the claim to recite that the biomolecule interaction measuring method utilizes surface plasmon resonance. **Church** does not disclose utilizing surface plasmon resonance, and instead relies on fluorescent proteins. Therefore, Applicants respectfully submit that claims 17 and 21 distinguish over **Church**.

Additionally, Applicants herein amend claim 17 to recite that the double-stranded oligonucleotide array has a background region on which a hydrophilic polymer molecule is

immobilized. Support for this claim is found in original claim 19. Similarly, Applicants herein amend claim 21 to recite a substrate with a solid surface comprising a background region on which a hydrophilic polymer molecule is immobilized, other than the region on which the first biomolecule is immobilized. Support for this claim is found in original claim 19 and in the specification at page 6, lines 1-4 in paragraph [0085].

In the claimed invention, it is important that a hydrophilic polymer molecule is immobilized on the background region. This is because a hydrophilic polymer molecule like PEG exhibits an excellent effect of inhibiting non-specific absorption and providing a large contrast relative to the spot area in a biomolecule interaction measuring method by utilizing plasmon resonance. This amendment is supported by the description at page 6, lines 8-11 in paragraph [0086]. Further, this is not taught by **Church**.

Applicants respectfully submit that the Office Action misunderstands the difference between the claimed invention and **Church**. The Office Action states "Regarding claim 19, Church et al teach the method of claim 17, wherein said measurement is performed using an array which has a background region on which a hydrophilic polymer molecule is immobilized (e.g., the array has diverse polymer sequences at selected regions of the substrate [column 8, lines 1-2], wherein portions for the substrate are protected with hydrophilic coating; column 8, lines 43-53)."

However, the protection with hydrophilic coating is used for preventing solution from passing outside of the designated flow paths in flow channel (column 8, lines 50-52 in Church et al). The flow channel method is applied to synthesis of diverse polymer sequences on the

selected regions of a substrate or solid support. This description never teaches the biomolecule interaction measuring method as claimed. Favorable reconsideration is respectfully requested.

Claims 22 is rejected under 35 U.S.C. §102(b) as being anticipated by Church as defined by Hovel and Jolly et al. (Modern Inorganic Chemistry, McGraw-Hill, New York, inside front cover, 1984).

It is the position of the Office Action that **Church** as defined by **Hovel** and **Jolly** disclose the invention as claimed. **Church** discloses at column 6, lines 44-47 the use of hexaethylene glycol. The Office Action states that the addition of an amino terminus and a carboxylate results in a molecular weight which is in the range of 200 to 20000 g/mol.

In response, Applicants respectfully submit that claim 22 is patentable due to its dependency on claim 21, which Applicants submit is patentable as discussed above.

Applicants' Response to Claim Rejections under 35 U.S.C. §103

Claims 17, 20, 21 and 33 were rejected under 35 U.S.C. §103(a) as being unpatentable over Church as defined by Hovel in view of Noblett (U.S. Patent No. 6,362,004).

It is the position of the Office Action that **Church** as defined by **Hovel** discloses the invention as claimed, with the exception of markers indicative of spots. The Office Action relies on **Noblett** to provide this teaching. It is noted that it is unconventional to include claims 17 and

21 in this §103 rejection. **Claims** 17 and 21 were rejected under 35 U.S.C. §102 as discussed above.

The rejection does not argue that **Church** lacks an element of claims 17 and 21, only that **Church** lacks the disclosure of spotting as recited in claims 20 and 33. With regard to claim 20 and 33, Applicants respectfully submit that these claims are patentable due to their dependency on claims 17 and 21, which Applicants argue is patentable for the reasons discussed above.

Claim 25 was rejected under 35 U.S.C. §103(a) as being unpatentable over Church as defined by Hovel in view of Cass et al. (U.S. Patent No. 6,312,906).

It is the position of the Office Action that **Church** as defined by **Hovel** discloses the invention as claimed, with the exception of teaching a thin gold layer. The Office Action relies on **Cass** to provide this teaching. In response, Applicants respectfully submit that claim 25 is patentable due to its dependency on claim 21

Claims 28 and 29 were rejected under 35 U.S.C. §103(a) as being unpatentable over Church as defined by Hovel in view of Brockman et al. (J. Am Chem. Soc., vol. 121, pp. 8044-8051 (1999)).

It is the position of the Office Action that **Church** as defined by **Hovel** discloses the invention as claimed, with the exception of surface plasmon resonance and surface plasmon resonance imaging. The Office Action relies on **Brockman** to provide this teaching.

Claim 28 is herein cancelled and thus the rejection is moot. With regard to claim 29, Applicants respectfully submit that the claim is patentable due to its dependency on claim 21.

Claim 31 was rejected under 35 U.S.C. §103(a) as being unpatentable over Church as defined by Hovel in view of Wiegel (U.S. Patent No. 6,107,034).

It is the position of the Office Action that **Church** as defined by **Hovel** discloses the invention as claimed, with the exception of transfer factors. The Office Action relies on **Wiegel** to provide this teaching. Applicants respectfully submit that the claim is patentable due to its dependency on claim 21.

For at least the foregoing reasons, the claimed invention distinguishes over the cited art and defines patentable subject matter. Favorable reconsideration is earnestly solicited.

Should the Examiner deem that any further action by applicants would be desirable to place the application in condition for allowance, the Examiner is encouraged to telephone applicants' undersigned agent.

If this paper is not timely filed, Applicants respectfully petition for an appropriate extension of time. The fees for such an extension or any other fees that may be due with respect to this paper may be charged to Deposit Account No. 50-2866.

Respectfully submitted,

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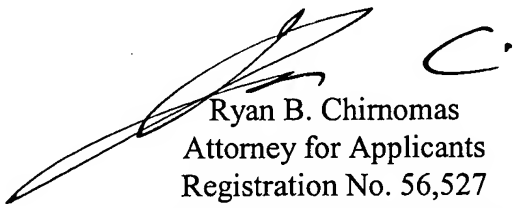

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